

Vink Solar Powered Coldroom with Delta Technics Engineering BV

FOREWORD



Vink Koeltechniek has delivered cooling systems for commercial and industrial purposes, for the past 40 years. Based in the

Netherlands near the city of Rotterdam, they operate internationally, adopting a personal and customised approach.

THE PROJECT

The challenge of food wastage is common, especially in developing countries where a large amount of the local harvest is wasted due to high temperatures, poor infrastructure and

a lack of cold storage.

Vink Equipment offers portable, walk-in cold rooms that work exclusively on solar energy. This

reliable system is perfect for remote locations, disaster-stricken areas or regions without a steady power grid.

THE SOLUTION

In addition to many other commercial and industrial refrigeration solutions, Vink Koeltechniek, based in Rotterdam, supply durable walk-in refrigeration and freezer units that are highly energy efficient. Vink's mobile cold rooms have high insulation values and are manufactured according to European standards. 100% solar-powered, the cold rooms are well insulated and easy to move. The solar panels are connected with a system that stores extra solar energy for night time. A 40 or 20 feet shipping container with solar panels

on top, can cool 0.5 to 5 °C or freeze at -24 °C to -18 °C. Using an ingenious thermal energy storage system, they can keep many types of products cool or frozen:

Pharmacy Critical vaccines and medicines can be stored at a controlled temperature, particularly beneficial in disaster locations or areas without a reliable power grid.

Fish Keeping fresh fish chilled, between 0 °C and 4 °C, is vital in order to avoid contamination and bacterial growth.

Meat Food safety requires special attention in the case of storing meat, for the adherence to compliance legislation. In Vink's cold rooms meat products are kept at a constant cool temperature. Frozen meat stays frozen 24/7 in a solar-powered freezer.

Vegetables & Fruit In warm climates, the waste of fresh food can be excessive. Solar-powered cold rooms are enabling local farmer associations to extend the freshness of their products before selling it at the local market.

SYSTEM DESIGN

Designed according to EU standards and to comply with HACCP food security regulations, the refrigeration system, within the solar-powered cold rooms, is inverter controlled and will adapt refrigeration capacity to sun intensity. Making optimal use of the sun and providing maximum running hours.

Energy is stored using a "cold-energy" system, featuring a specially designed cold storage pack. The thermal energy storage system is passive, and therefore, does not need maintenance and will work for 25

years without losing effectiveness. For areas with low sun availability, or a demand for large cooling down or fast freezing systems, a generator back-up option is available.

The whole system, consisting of compressor, evaporator, condenser, specially designed ceiling-mounted "cold-energy" storage pack and solar panels on the outer roof of the container, is controlled using an Intuitive Controller TDB (PR0650 NF TDB) - with external display PR0725. The Intuitive TDB controller comes with programmable logic control

software, TDB, built-in. The TDB software was used to create a custom program to control and monitor the entire system. Benefiting from free desktop editing software, and including a license that is for the lifetime of the hardware, compared to the industry standard of annual license fees, the device was the stand out option. To facilitate monitoring and incident notifications, a 4G GSM Router was used, which allowed for remote monitoring and management of the unit.

BENEFITS

- Eco-friendly
- No running costs
- Low maintenance
- Remote monitoring

ABOUT

Vink Koeltechniek has delivered cooling systems for commercial and industrial purposes, for the past 40 years. Based in the Netherlands near the city of Rotterdam, they operate internationally, adopting a personal and customised approach.

"The ease of programming with RDM's TDB software and the available connections for I/O on the controller were decisive for the use of an RDM Plant Controller TDB for this project."

References

<https://vinkkoeltechniek.com/products/solar-coldroom>

